

broken part of the arm continued straight and free from pain, I judged it in a favourable condition for union; nor did I at all suspect that the tone of the muscles had so far ceased as to admit of that separation by the weight of the lower arm, which would prevent the union. I related those facts to caution others against those hopes, and that ideal security which disappointed me in this instance, and which I believe would have taken the same course in every other practitioner's hands. The reader will perceive, that in all the leading points Mr. Wilkinson and I do not differ, although on the subject of depletion we may vary in the general acceptance.

That inflammation is one of the consequences of fractures to be managed with nice attention, every one must agree. To regulate the degree and course of this natural process, by means of medicine, diet, &c. every one must also assent, but the young practitioner will generally find more occasion to fear the excesses than the deficiencies of inflammation.

Old habits may in some instances be connived at, but a man should consult the records before he grants licences of this kind. These are, however, digressions from the subject of imperfect union in fractures. The soldier was advised to undergo an operation for the removal of the splinter, but it was postponed. Should the enquiries which I have put forth, and the remarks of your worthy correspondent, lead surgeons to avert, in any solitary instance, the misfortune of a disunited fracture, by looking to the causes already assigned, or by fixing on more just and more philosophical causes, the objects of my enquiry will be answered. The same motives and the same satisfaction cannot fail to prove the reward of Mr. Wilkinson's labours.

*Soho Square,
November 5, 1801.*

I am, DEAR SIR, &c.

A. CARLISLE.

Observations on the Effects of Opium applied externally.
By M. WARD, Surgeon to the Manchester Infirmary.

“ In the introduction of new modes of treatment, it is incumbent on the medical practitioner, to be sedulously cautious, not only that he founds his trials on just analogies, but that he conducts them with impartiality, and records, with faithfulness, their good or ill success.”

Medical and Physical Journal, for July, 1799, p. 445.

IN the latter part of my first paper on the effects of Opium applied externally, I took the liberty of suggesting such inference

ences as appeared to be deducible from the experience I had then had of their effects; namely, 1. That opium, when dilligently applied externally so as to be absorbed by the lymphatics, has powerful effects in allaying irritation, removing spasm, and procuring sleep. 2. That it is capable of producing these happy effects, where the exhibition of it internally had not the same salutary operation. 3. That this mode of introducing it into the system may be resorted to with advantage, when it cannot be given internally, or when it will not stay upon the stomach.*

Considering the above as incontrovertible facts, I could not avoid indulging a hope, that some benefit might probably arise from this mode of introducing opium into the system in Hydrophobia and Tetanus; and the more I reflected on the subject, the stronger was my conviction that the misery and danger attendant on these fatal maladies could not be increased by this practice; which is more, I fear, than can be said of the present mode of treatment, in Hydrophobia especially. It is true, I was unable to adduce positive evidence in support of my opinion; but the following considerations seemed sufficient to shew there was nothing improbable in the idea I entertained, and that it was not so wholly destitute of foundation in rational theory as might at first sight appear. With this view, I mentioned, 1. The strong indications in favor of employing opium in these diseases; 2. The frequent inability of swallowing either food or medicine; 3. The violent (and sometimes fatal) spasms which are excited by almost every effort of that kind; † 4. ‡ The peculiar advantage should opium prove an antidote to the canine virus of introducing it by the same system of vessels which convey the virus into the circulation; 5. The inefficacy of every plan of treatment hitherto tried.

After endeavouring to obviate such objections as might be supposed to arise, from its appearing probable that the *modus operandi* is the same, whether opium be administered internally, or applied externally, I ventured to propose a plan of treatment which seemed less objectionable than those in common use, and more conformable to some of the leading circumstances of the diseases.

That the task I undertook to perform was very imperfectly executed is sufficiently evident; it is therefore not surprising, that my endeavours to demonstrate the absurdity, and even

* Medical and Physical Journal for July 1799, p. 447.

† A powerful motive for discontinuing the attempts to cure by internal means.

‡ This important observation was suggested to me by Dr. Percival.

cruelty, of persisting in that hackneyed routine of practice in hydrophobia, which experience has repeatedly shewn to be only calculated to harass and distress the patient, and to disappoint and disgrace the medical practitioner, have not been attended with all the success I could have wished.

I conceive however, that much has been done in the interval which has elapsed, towards preparing the way for trying the effects of opiate frictions in hydrophobia, by the unequivocal and satisfactory demonstrations which have been given of the anodyne and antispasmodic properties of opium when applied externally, in the course of the lymphatics, by means of long continued friction. Various cases have been recorded where it was thus introduced, and was found to exert its salutary virtues, so as to produce the most beneficial consequences, (and without occasioning those inconveniences which often arise from its internal use, especially in large doses,) after the same medicine, both alone, and joined with other antispasmodics, tonics, &c. had been exhibited internally with little or no benefit, or had been rejected altogether;* and though the *modus operandi* of opium applied externally has not been completely ascertained, we shall hardly be inclined to reject the important facts we are now acquainted with, merely on that account.

Hitherto my attempts to ascertain the primary operation of opium applied externally, on the pulse, have not been successful. Patients afflicted with spasmodic or convulsive diseases being usually timid and apprehensive, are not favourable subjects for the purpose; but I have reason to believe opium acts more directly and simply as a sedative, when applied externally, than when given internally; and I think it is principally, if not entirely, owing to this difference in the *modus operandi*, that the superior advantages of applying it externally, in certain cases are to be attributed.

Several passages occur in the places just referred to, which, though not decisive, strongly corroborate this idea. In the case of Mr. G. P. (*Medical Journal* for July 1799, p. 441) calmness was the first effect of the opiate frictions, which was succeeded by sleep, a return of appetite; and the first time his pulse was examined, it was found reduced from 100 to 80; and in that of Mrs. ———, (p. 443,) "I found her in a state of high delirium without fever. Having remarked, that under similar circumstances, the internal exhibition of laudanum aggravated

* *Medical and Physical Journal* for July, 1799, p. 441—9. Ditto for August, 1799, p. 6—8. Ditto for September, 1799, p. 103 and 107. Ditto for February, 1800, p. 102. Ditto for July, 1801, p. 17. Ditto for November, 1801, p. 387, 432, and 433.

vated the affection of her head, probably by producing inebriation, I regarded this as a peculiarly favourable opportunity of trying the use of opium externally. I therefore directed, &c. In a few hours she was observed to become considerably calmer. The like inunction was repeated at night." The day following, "I found her perfectly composed and rational. She had enjoyed much refreshing sleep. Her pulse was regular, her heat natural, and a gentle perspiration had taken place soon after the first inunction."

Another case is related, (p. 444) where its sedative operation appears still more evidently; and in that of John Jackson, (Medical Journal for August 1799, p. 7,) its sedative power is equally apparent. "June 12. He found means in the night to extricate himself from the strait waistcoat, and has been so noisy the two last nights, as to disturb the patients in the neighbouring wards: He never ceases talking; his eyes are blood-shot; a constant tremulous motion prevails in every part of his frame; tongue furred; pulse 120. June 13. He slept well the whole of the last night; the tremor is gone, and he is easy, composed, and rational; pulse reduced from 120 to 88. The strait waistcoat was taken off. He has no complaint, except a slight mazes in his head. Two portions of liniment, each containing half a drachm of opium, were applied."

Mr. Henry says, (Medical Journal for Sept. 1799, p. 104, "She now, with a degree of obstinacy which I seldom witnessed, protested against taking any medicine, or even any appropriate food. She was sinking fast; her pulse very rapid and feeble, and she had a tendency to delirium. Wine, which in this state seemed highly requisite, she positively rejected; and I despaired of being able to succeed by internal means; I therefore resolved to try the external application of opium. The following ointment was directed; &c. This application seemed to have some sedative effect, and was therefore repeated in the evening. The good effects were each time more evident, sleep almost constantly followed the application of the ointment, though no more laudanum was given internally; her pulse, and the intensity of heat, were gradually reduced, the diarrhoea was stopped, &c."

In the same Number, (p. 107.) a striking proof is recorded of the good effects of opium applied externally in gangrene. It was not prescribed till after the failure of "opium internally both in the solid and liquid form, with as much bark and wine as the patient's stomach would bear, which she took a week without much abatement of the pain; the ulcer still spreading; her stomach rejecting every thing she took, &c. I directed, &c. The next morning she was easier, and the ulcer did not

appear to have spread. The frictions were continued five days longer, with an ounce of the tincture of opium each day; during which the pain left her, and the ulcer looked better every day, &c." (Mr. Barlow had before said, the ulcer had a gangrenous appearance; the pain was excessive, and, as she expressed herself, shot from her thumb to her heart.) It is worthy of remark, that the ulceration was spreading when the first portion of opium was applied, and that its progress was immediately arrested: And this effect of opium is also clearly exemplified, in a very interesting case, published in December 1799, by Mr. Docker, Surgeon to the Forces at Deal. As it establishes this point, I shall beg leave to transcribe it.

"John Baylis, of the third regiment of Guards, was received into the military hospital at this place, from Holland, as a venereal patient.

"Upon examination, I found a considerable sphacelation in the groin, from a bubo which had been opened some time. It was then rapidly increasing; and from the general state of his health, I had every reason to fear a fatal termination. The part was ordered to be fomented, and the carrot poultice applied; he had cordials, with bark and opium prescribed, and as much wine as he could take; but, notwithstanding, the sphacelation still continued to advance. Oct. 12. This morning I found him extremely ill; the attendants thought he would have died in the night. His stomach rejected every thing he took; his pulse could scarcely be counted; a diarrhoea had come on, and his groin presented a most shocking appearance. I concluded a few hours would have terminated his existence. It now occurred to me, that opium, introduced by friction, would probably be attended with advantage, and I determined to try it as the last resource. I accordingly directed the following to be immediately rubbed into the thighs and legs. Tinct. opii zij. Camph. ℥ij. Ol. oliv. ℥ij. Vitel ovi q. s. M.

"I visited him a short time afterwards, and found him, I thought, more composed and less languid, and he had taken some wine without sickness. I directed the same quantity to be used again, and to be repeated in the course of the night, with the addition of one drachm of Tinct. Opii. October 13. This morning evidently better; had passed the night with some sleep, and the inflammation about the edges of the ulcer considerably abated; the diarrhoea had also stopped. I directed three drachms of Tinct. Opii to be used three times in the course of the day. I saw him in the evening; he had taken a good deal of wine, and some soup, without any sickness, and his pulse was better; four drachms of Tinct. Opii were ordered to be used during the night. 14th. This morning he appeared in a progressive

gressive state of recovery, though he had slept but little, and perspired profusely; but he had a regular stool, and the inflammation about the edges of the ulcer had stopped, and its surface looked less gangrenous. I directed four drachms to be rubbed in every five hours. 15th. A good deal of composed sleep during the night; the inflammation and spreading entirely stopped; the slough separated from the sound parts, and the ulcer now looked quite clean. He has taken a little wine during the last twenty-four hours, and eat some fish with appetite; the friction continued. 16th. Slept the greatest part of the night, and awoke greatly refreshed; friction continued. 17th. The carrot poultice omitted, and the ulcer treated with simple dressings; the friction continued, and he was directed to take some infusion of bark. 19th. As the bark had created nausea, I ordered it to be omitted; and as his health and appetite now rapidly improve, I diminished the opium one third. 24th. He has now a very good appetite, and the ulcer heals rapidly; the opium diminished one half. 27th. The opiate friction entirely left off, and he is directed to take the decoction of bark, with elixir of vitriol. Nov. 13th. The ulcer is now almost healed, and he is, in other respects, in perfect health." *Medical Journal for February 1800, p. 102—4.*

Here, the sedative power of opium in diminishing the irritability, sensibility and mobility of the system, and the diseased actions consequent thereon, is exceedingly evident. On the 12th, the sphacelation still continued to advance, and the pulse could scarcely be counted. On the morning of the 13th, the inflammation about the edges of the ulcer was considerably abated, the diarrhoea had also stopped; and in the evening, his pulse was better: (from which I conclude, that whatever other alteration was observable in the pulse, its frequency was diminished). On the 14th, the inflammation about the edges of the ulcer had stopped, and its surface looked less gangrenous. 15th. The inflammation and spreading were entirely stopped; the slough was separated from the sound parts, and the ulcer looked quite clean.—A remedy capable of frequently producing these effects, has long been a desideratum in medicine; and I have great hopes, that opium, applied externally, will, in some degree, supply this defect; attention being given to the employment of such other means as may tend to promote the object in view.

I should feel myself greatly indebted to Mr. Docker, if he would have the goodness to reply to the following queries, through the medium of the *Medical and Physical Journal*. Did each portion of liniment contain half an ounce of camphire and
two

two ounces of oil? Have any syphilitic symptoms appeared since the bubo was healed? Has any mercury been employed?*

A case of great importance occurs in the Medical Journal for July 1801, p. 17. It is on the external use of opium in hiccup, and is addressed to the Editors of the Medical and Physical Journal.—After premising some particulars, which it will be unnecessary to introduce here, Mr. Gapper tells us, “On the 19th he was seized with a hiccup, the most violent, distressing, and incessant I ever witnessed; it continued, without even ceasing a single minute, for near *eighty hours*, before any relief was obtained. The pulse during this period was small, and fluctuated from 120 to 130 in a minute. I was not remiss in employing whatever remedies I judged most likely to be of service. Musk, asafoetida, amber, æther, volatiles, and opium were given, variously combined, at short intervals, and in considerable doses. A large blister was applied to the region of the stomach, and fomentations to the feet. At the end of the above mentioned period, not the least abatement could be perceived, the hiccup continuing as loud, as violent, and as incessant as ever. I began now to despair of my patient; when, as every thing else had failed, it occurred to me to employ opium by friction, in the manner I had seen it recommended in your useful Journal in cases of delirium attendant on Typhus fevers. I therefore ordered, &c. When I saw him the next morning, the liniment had been twice used, and I was much pleased to find with some effect. He was much more composed than on the preceding night; and though the hiccup was still as frequent as ever, yet it was less violent and loud; the pulse was also reduced to 112. Encouraged by these flattering circumstances, I ordered a continuance of the liniment. On the morning of the 22d he was in much the same state as on the preceding day; but in the evening, I was happy to find that intermissions, though short ones, had taken place. On the next day the intermissions were increased in frequency, and were extended to the length of half an hour or more, and the pulse was reduced to 90. The liniment was continued as before. From this time the hiccup became less frequent and violent, and the intermissions longer, until the 25th, when it wholly left him. The remainder of the case, as not being connected with the subject, it is unnecessary to relate; it is sufficient to say that my patient ultimately recovered.” “During the
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* I have lately employed camphire along with opium, externally, in a case of Typhus Fever, with a view to its sedative, antiseptic, and antispasmodic qualities. The effects were beneficial; but not more so than I have repeatedly seen take place from the employment of opium alone.

the use of the liniment he took no other medicine than the simple saline draught; and so far from the bowels becoming constipated under its use, it was not even necessary to give him any aperient medicine during its exhibition. It occasioned a considerable degree of drowsiness, but not in any degree to excite the least alarm. The quantity of Tinct. Opii used was two ounces in the space of little more than three days; * a quantity which could not have been exhibited in any other way without the most imminent hazard and danger. Such a wonderful effect as is here related, naturally leads the mind to speculate on the *modus operandi*, and to discover why a certain quantity of opium may be conveyed into the system through the absorbents, not only without detriment, but with great and decided advantage, which, if admitted into the stomach, would probably occasion death. I shall not enter into such a disquisition, as many and repeated experiments, and much reflection, are necessary to give a satisfactory explanation; I shall only be happy if, in similar circumstances, it may prove as efficacious in other hands as it has done in mine."

This case applies with peculiar force in support of the idea I entertain of the mode of action of opium mentioned above. There is no ambiguity in the statement; every necessary information is given of the state of the patient, both before and after the use of the opiate frictions. †

In the Medical Journal for Nov. 1801, a case well worthy of being preserved, on account of the important facts it contains, is addressed to the Editors, by Mr. White of Bath, who concludes as follows. "What is very remarkable, she never was sick, nor vomited after the first friction, but fell asleep *immediately* on the application of the opium, and slept some time. The fomentation and friction were continued a few days, gradually decreasing the quantity of opium; and as her stomach could bear it, a little wine was frequently given. It may be observed, that not only the vomiting ceased, but the diarrhoea also; and she had no complaint afterwards, except a slight pain of her legs. Her pulse was reduced to 96 on the third day, which before was exceedingly quick." "She is recovering her strength very fast."

I conceive it will be impossible to explain the facts just re-

* More than this quantity was used in the same space of time in the case of John Baylis.

† I once saw a similar instance of Singultus, where this was the principal disease. Every thing proved ineffectual, and the patient died. Had I been at that time acquainted with the powers of opium applied externally, I should not have hesitated to have recommended it.

lated, by supposing the *modus operandi* of the medicine to be the same in the two different ways of introducing it.*

After the many facts which have been adduced, could any doubts be entertained of opium being more efficacious and salutary in some diseases, when externally applied, than when given internally; the case of Betty Richards, related by Mr. Jenkinson, (p. 432 of the *Medical Journal* for November, 1801,) could not fail, I think, to remove them.

From a single instance, no general conclusions can, with propriety, be drawn; otherwise, Mr. Boutflower's case of Tetanus (p. 443) would seem to establish the superior utility of opiate frictions in that disease; but I would rather wait till farther experience shall enable us to speak with more certainty on a subject of so much moment. It will be obvious that they cannot be expected to succeed in every instance, (perhaps in no instance) without the aid of such other means as the nature of the case and the cause producing it, may require.†

Manchester, Nov. 15, 1801.

[To be continued.]

Remarks on Vaccine Inoculation, by Mr. RING, Member of the Royal College of Surgeons in London.

TO the EDITORS of the MEDICAL and PHYSICAL JOURNAL:

Gentlemen,

IN your Journal for October is an article, stating, that the Cow-pox appeared in the sixth century, proving extremely fatal;

* It is here taken for granted, that the alterations stated to have taken place, are to be attributed principally to the opium, applied externally; not only in this, but in all the cases, which I have taken the liberty of commenting upon.

† I have lately met with an instance of Tetanus, in a girl of eighteen, brought on by a blow on the hypogastric region. The inflammatory symptoms ran so high as to require the repeated applications of leeches, blisters, antiphlogistic purgatives, fomentations, the warm bath, &c. Opium was also employed, both internally and externally. The accident happened seven weeks ago. When I saw her last, there was a considerable fullness and tension of the abdomen, and it appeared to me, that matter was forming within the cavity; the spasms had nearly subsided for a few days, but at that time they came on more frequently. The opium internally was, I think, rather hurtful, and how far the external application was useful, I am unable to say.